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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------|-------------|----------------------|---------------------|------------------|
| 10/758,188 | 01/15/2004 | In Su Kim | 20063/OG03-046 | 5382 |
| 34431 | 7590 | 07/01/2005 | EXAMINER | |
| HANLEY, FLIGHT & ZIMMERMAN, LLC | | | SMITH, BRADLEY | |
| 20 N. WACKER DRIVE | | | ART UNIT | |
| SUITE 4220 | | | PAPER NUMBER | |
| CHICAGO, IL 60606 | | | 2891 | |

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

ELK

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 10/758,188 | Applicant(s) KIM, IN SU | |
| | Examiner Bradley K. Smith | Art Unit 2891 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-6 is/are rejected.
- 7) ☒ Claim(s) 2 and 7-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3/8/04</u> . | 6) <input checked="" type="checkbox"/> Other: <u>search notes</u> . |

DETAILED ACTION

Drawings

1. Figures 1a-1c should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3-5 are rejected under 35 U.S.C. 102(a) as being anticipated by Dong et al. (KR2003094442). Dong et al. disclose depositing an oxide layer, a first conducting layer for a floating gate, a dielectric layer, and a second conducting layer for a control gate in sequence on a semiconductor substrate including a device isolation layer; forming gates by removing some part of the oxide layer, the first conducting layer, the dielectric layer, and the second conducting layer; forming a mask pattern for a self-aligned source over the substrate including the gates', removing the device isolation layer exposed between the gates; performing an ion implantation process', and eliminating damage generated during the ion implantation process or the removal process of the device isolation layer (see detailed description). With regards to claim 3 Dong et al. disclose the first and second conductive layers are formed of polysilicon. With regards to claim 4, Dong et al. disclose and ONO structure (212, 213, 214). With respect to claim 5, Dong et al. inherently disclose the use of dry etching.

5. Claims 1, 3-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Yang et al. (US Patent 6,784,061). Yang disclose depositing an oxide layer, a first conducting layer for a floating gate, a dielectric layer, and a second conducting layer for a control gate in sequence on a semiconductor substrate including a device isolation layer; forming gates by removing some part of the oxide layer, the first conducting layer, the dielectric layer, and the second conducting layer; forming a mask pattern for a self-aligned source over the substrate including the gates', removing the device isolation

layer exposed between the gates; performing an ion implantation process', and eliminating damage generated during the ion implantation process or the removal process of the device isolation layer (eliminating the damage would be inherent since the ion implant has to be annealed in order to activate the ions) (see figure 6 and column 3 lines 5-25). With regards to claim 3 Yang et al. disclose the first and second conductive layers are formed of polysilicon (column 1 lines 60-65). With regards to claim 4, Yang et al. disclose and ONO structure (column 1 lines 60-65). With respect to claim 5, Yang et al. disclose the use of dry etching (column 3 lines 5-25).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US Patent 6,784,061). Yang et al. discloses the claimed invention except for applying a top power between 800W and 1500W under a pressure between 100 mTorr and 300 mTorr. It would have been obvious to one of ordinary skill in the art at the time the invention was made to applying a top power between 800W and 1500W under a pressure between 100 mTorr and 300 mTorr, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or

working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Furthermore the particular power and pressure are well within normal parameters.

Allowable Subject Matter

8. Claims 2, 7-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record neither teaches nor suggests within the context of the entire claim, washing the substrate to remove the damage and forming and insulation layer (claim 2), dry etch using C₄F₈, CHF₃, O₂ and Ar at particular pressures (claim 7), the damage is removed by a chemical dry etch process (claims 8-12).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bradley K. Smith whose telephone number is (571) 272-1884. The examiner can normally be reached on 10-6 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571) 272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2891

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Brad Smith', is positioned above the printed name.

Brad Smith
Primary Examiner
Art Unit 2891